

Fall 2023

Transistor Circuit Design

Course number 16:332:587

Time and location: Tuesdays and Thursdays from 3:50 - 5:10 pm in SEC 217 on Busch campus

Instructor information:

Taerin Chung, Ph.D.

Email: taerin.chung@rutgers.edu

Office hour/location: TBA

Course overview/description

This course introduces the design and application of a broad range of device-oriented circuits in a comprehensive manner. Recent micro/nano-fabrication processes for silicon technology including micro/nano fabrication facilities and instruments are discussed. This course presents the design of discrete transistor circuit, BJT, MOSFET theory, transistor amplifier for High-frequency and Low-frequency, switching applications, and power applications regarding biasing and noise. Specific topics are as follows,

Topics covered

- Introduction / modern semiconductor fabrication processes
- Semiconductor Diode
- BJT
- MOSFET
- Linear amplifiers
- Frequency response of Transistor Amplifier
- Operational Amplifier
- Power supplies
- Oscillators
- Phase Lock Loops
- Frequency Synthesizers
- Non-linear circuits and special devices

Course objective

The goal of this course is to provide the students an insight into analysis and design of the transistor circuits that find extensive applications in recent electronics and IC chips.

Reference Textbook

Electronic Circuit Design and Application, Springer 2021

Handouts and papers developed by instructor will be downloaded.

Grading policy

Mid-term exam (open-note): 30%

Final project: 30%

Review(or Research) Paper: 20%

Homeworks: 10 %